CLAIMS

What is claimed is:

1. A method, comprising:

executing an electronic hybridization assay on a first sequence and a reference sequence, the first sequence representing at least one or more subunits of a first molecule and the reference sequence representing at least one or more subunits of a second molecule; and

providing an output representative of a hybridization reaction between the first and second molecules.

2. A method as claimed in claim 1, further comprising the step of encoding the first sequence so that said executing step is optimized.

3. A method as claimed in claim 1, further comprising the step of encoding the first sequence so that said executing step is optimized, wherein the first sequence includes at least one positive value and at least one negative value.

4. A method as claimed in claim 1, said executing step including the step of performing a correlation algorithm on the first sequence and the reference sequence, the output of said providing step including a correlation output.

5. A method as claimed in claim 1, further including the step of identifying the first molecule based upon the output of said providing step.

6. A method as claimed in claim 1, further including the step of identifying a position of sequence similarity between the first molecule and the second molecule.

7. An apparatus, comprising:

means for executing an electronic hybridization assay on the first sequence and a reference sequence, the first sequence representing at least one or more subunits of a first molecule and the reference sequence representing at least one or more subunits of a second molecule; and

means for providing an output representative of a hybridization reaction between the first and second molecules.

8. An apparatus as claimed in claim 7, said executing means comprising an electronic hybridization machine.

9. An apparatus as claimed in claim 7, said executing means comprising a computer appliance structure.

10. An apparatus as claimed in claim 7, said executing means comprising a digital signal processor structure.

11. An apparatus as claimed in claim 7, said executing means comprising a hardware correlator device structure.

12. An apparatus as claimed in claim 7, further comprising means for encoding the first sequence so that execution by said executing means is optimized.

13. An apparatus as claimed in claim 7, further comprising means for encoding the first sequence so that execution by said executing means is optimized, wherein the first sequence includes at least one positive value and at least one negative value.

14. An apparatus as claimed in claim 1, said executing means including means for performing a correlation algorithm on the first sequence and the reference sequence, the output of said providing means including a correlation output.

15. An apparatus as claimed in claim 7, further including means for identifying the first molecule based upon the output of said providing means.

16. An apparatus as claimed in claim 7, further including the means for identifying a position of sequence similarity between the first molecule and the second molecule.

17. A machine readable medium having a program of instructions stored thereon, the program of instructions for causing a machine to implement steps for executing an electronic hybridization assay according to the program of instructions, the steps comprising:

executing an electronic hybridization assay on the first sequence and a reference sequence, the first sequence representing at least one or more subunits of a first molecule and the reference sequence representing at least one or more subunits of a second molecule; and

providing an output representative of a hybridization reaction between the first and second molecules.

18. A machine readable medium as claimed in claim 17, the steps further comprising the step of encoding the first sequence so that said executing step is optimized.

19. A machine readable medium as claimed in claim 17, the steps further comprising the step of encoding the first sequence so that said executing step is optimized, wherein the first sequence includes at least one positive value and at least one negative value.

20. A machine readable medium as claimed in claim 17, the executing step including the step of performing a correlation algorithm on the first sequence and the reference sequence, the output of the providing step including a correlation output.

21. A machine readable medium as claimed in claim 17, the steps further including the step of identifying the first molecule based upon the output of the providing step.

22. A machine readable medium as claimed in claim 17, the steps further including the step of identifying a position of sequence similarity between the first molecule and the second molecule.

23. A method, comprising:

correlating a first sequence and a reference sequence, the first sequence representing at least one or more subunits of a first molecule and the reference sequence representing at least one or more subunits of a second molecule; and

providing an output from said correlating step representative of a relationship between the first and second molecules.

24. A method as claimed in claim 23, further comprising the step of optimizing the first sequence and the second sequence prior to implementing said correlating step.

25. A method as claimed in claim 23, said correlating step including a multiply and accumulate operation.

26. An apparatus, comprising:

means for correlating a first sequence and a reference sequence, the first sequence representing at least one or more subunits of a first molecule and the reference sequence representing at least one or more subunits of a second molecule; and

means for providing an output from said correlating step representative of a relationship between the first and second molecules.

27. An apparatus as claimed in claim 26, said correlating means comprising at least one structure selected from the group comprising a digital signal processor, a general purpose processor, a general purpose processor that includes digital signal

processing instructions, a comparator circuit, a shift register circuit, and a hardware correlator.

28. An apparatus as claimed in claim 26, said correlating means including means for executing a multiply and accumulate operation.

29. An apparatus as claimed in claim 26, said means for correlating including at least one or more parallel channels for executing at least one or more correlation algorithms simultaneously, one correlation algorithm for each channel.

30. An apparatus as claimed in claim 1, at least one of the first sequence and the reference sequence representing a molecule from the group comprising DNA, RNA, a nucleotide, an amino acid, a peptide, and a protein.